

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1-9. (cancelled)

10. (new) A method of imaging a subject comprising the steps of administering into a subject a substrate molecule (SH) endowed with at least one mobile proton in exchange with bulk water bound to a paramagnetic chelate complex (SR) of a metal ion selected from iron (II) (high-spin configuration), iron (III), cobalt (II), rhodium (II), copper (II), nickel (II), cerium (III), praseodymium (III), neodymium (III), dysprosium (III), erbium (III), terbium (III), holmium (III), thulium (III), ytterbium (III) and europium (III); and imaging said subject using a CEST based MRI procedure.

11. (new) The method of claim 10 wherein the substrate molecule (SH) is diamagnetic and is selected from linear and cyclic polyamines, polyaminoacids, proteins, polysaccharides, polyamidoamine, peramidated polyaminoacids, dendrimers containing amide groups, polycyclodextrins, polysaccharides and alginates.

12. (new) The method of claim 11 wherein the substrate is selected from polyarginine, albumin and cyclen.

13. (new) The method according to any of claims 10 to 12 in which the paramagnetic chelate is $[LnDOTP]^{4-}$ and the Ln metal ion is selected from the following: Ce(III), Pr(III), Nd(III), Eu(III), Tb(III), Dy(III), Ho(III), Er(III), Tm(III), Yb(III).

14. (new) The method according to any of claims from 10 to 13 wherein the substrate molecule (SH) is compartmentalized in biocompatible systems selected from the group consisting of liposomes, nanoparticles, microemulsions and protein cavities.

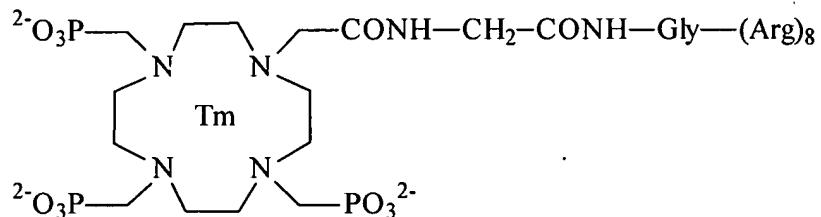
15. (new) The method of claim 14 wherein the substrate molecule (SH) is a water molecule.

16. (new) The method of claim 10 wherein the interaction between the substrate molecule (SH) and the paramagnetic chelate complex (SR) is of electrostatic type being the apparent thermodynamic constant of SR-substrate association (K_A) being greater than 10.

17. (new) The method of claim 10 wherein SH is covalently bound to SR.

18. (new) A paramagnetic CEST agent comprising a substrate molecule (SH) endowed with at least one mobile proton in exchange with bulk water bound to a $[\text{LnDOTP}]^{4-}$ as paramagnetic chelate complex (SR).

19. (new) A paramagnetic CEST agent of formula:



20. (new) A diagnostic composition comprising the agent of claim 18 or 19 together with a suitable vehicle.

21. (new) A CEST based MRI procedure in which a paramagnetic CEST agent comprising a substrate molecule (SH) endowed with at least one mobile proton in exchange with bulk water bound to a paramagnetic chelate complex (SR) of a metal ion selected from iron (II) (high-spin configuration), iron (III), cobalt (II), rhodium (II), copper (II), nickel (II), cerium (III), praseodymium (III), neodymium (III), dysprosium (III), erbium (III), terbium (III), holmium

(III), thulium (III), ytterbium (III) and europium (III) able to increase the separation of said mobile proton(s) frequency off the bulk water is administered to a subject in order to enhance the contrast in a CEST based MRI method.